I. Summary

With rapid development of computer industry, USB is taking the place of various kinds of traditional low speed peripheral interfaces. However, RS-485/RS-422 interface designs are still used in many of the important facilities under current industrial environment, therefore, converter is used by many users to implement the data transmission from USB of a computer to RS-485/RS-422 equipments.

UT-890 is a universal USB/RS-485/RS-422 converter. Without external power supply needed. Compatible with USB, RS-422 and RS-485 standards. UT-890 is capable to perform the conversion from single-ended USB signal into balance differenced signal of RS-422 or RS-485. Quick state-of-the-art transient voltage suppressor (TVS) and discharge tube are adopted to protect the RS-422/RS-485 interfaces. Under normal conditions, the TVS tube is in the state of high resistance. However, when both ends of the TVS tube are hit by a transient high energy voltage possibly caused up by various reasons, and at the same time, a high-speed transmission of RS-422/RS-485 interfaces is ensured when converter is used in full-duplex or half-duplex mode, a proper matching resistance should be connected at the terminal of the line (120Ω 1/4W).

In order to prevent the signal reflection or interference when converter is used in full-duplex or half-duplex mode, a proper matching resistance should be connected at the terminal of the line (120Ω 1/4W).

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IV. Hardware installation and application

Read the user manual carefully before installing the UT-890 interface converter. Put the signal cable of the equipment into the USB socket. The product adopts the universal connector of USB, DB-9 or RJ-45 for input and output interface with automatic mode shift RS-485 or RS-422 mode without jumper setting. Either twisted pair cable or shielded cable is applicable for easy installation or un-installation. T/R+/T/R- represents sending and receiving the A+/B-, RXD+/RXD- represents receiving the A+/B-, GND represents public underground line. Point-to-point and point-to-multipoint and full duplex communication use the four lines of T/R+, T/R-, RXD+ and RXD-.

UT-890 interface converter supports the following 4 communication modes:

1. Point-to-point 4-line full duplex
2. Point-to-multipoint 4-line full duplex
3. Point-to-point 2-line half duplex
4. Point-to-multipoint 2-line half duplex

V. Communication Connection Chart

USB to RS-422 conversion

1. RS-422 point-to-point/4-line full duplex

<table>
<thead>
<tr>
<th>DB9 connector (Pin)</th>
<th>Output signal</th>
<th>RS-485 full duplex cabling</th>
<th>RS-422 full duplex cabling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T/R+</td>
<td>Sending(A+)</td>
<td>RS-485 (A+)</td>
</tr>
<tr>
<td>2</td>
<td>T/R-</td>
<td>Sending(B-)</td>
<td>RS-485 (B-)</td>
</tr>
<tr>
<td>3</td>
<td>RXD+</td>
<td>Receiving(A+)</td>
<td>Null</td>
</tr>
<tr>
<td>4</td>
<td>RXD-</td>
<td>Receiving(B-)</td>
<td>Null</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Grounding</td>
<td>Grounding</td>
</tr>
<tr>
<td>6</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
III. Connector and signal

1. Data communication failure
   A. Check to make sure USB cable is OK.
   B. Make sure RS-485/RS-422 output interface cable is OK.
   C. Make sure power supply is OK.
   D. Make sure the wire terminal connection is OK.
   E. Make sure the indicator lights flash when receiving.
   F. Make sure the indicator lights flash when sending.

2. Data missing or incorrect
   A. Check to see whether the data rate and format at both ends of the communication equipment are consistent.

VII. Driver installation

Once a UT-890 converter is connected with the USB port, the following window will pop up. Select Install from a list or specific location (Advanced), then click Next to continue.

Then a window pops up to choose search and installation options as the following, please select Don't search. I will choose the driver to install, and then click Next to continue.

Then a window pops up for Hardware Type listing, pull the scroll bar to select Universal Serial Bus Controllers and click Next to continue.
In the following, select the device driver you want to install for this hardware, click Have Disk to continue.

In the Locate File window, select CD path, then choose the directory Driver and click the button Open or double click to open.

In the Install From Disk window, click Browse to select the path of the device driver.

Select the file FTDIBUS.INF, then click Open.

Select the applicable operation system, e.g. select and double click to open WINXR.2003.2000 for Windows XP.

Installation information has been located by the system as the following, just click Next to continue.

The following shows that the USB Serial Converter installation is finished, then the system wizard will detect USB Serial Port automatically.

In the Install From Disk window, just click OK.

Select the applicable operation system, e.g. select and double click to open WINXR.2003.2000 for Windows XP.

The following is the Found New Hardware Wizard for USB Serial Port, click Next as for USB Serial Converter, the same steps are omitted here.
Installation information has been located by the system as the following, just click Next to continue.

The following shows the USB Serial Port installation is finished. Up to now, all the drivers for UT-890 are installed.

After installation, you can open Device Manager to check if there are COM ports available now. If no USB drivers have been installed previously, System default COM ports are COM 3, 4, 5 and 6 as illustrated below. Now, all the installation is finished.